Functional Abdominal Pain Syndrome

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Functional abdominal pain syndrome (FAPS) differs from the other functional bowel disorders; it is less common, symptoms largely are unrelated to food intake and defecation, and it has higher comorbidity with psychiatric disorders. The etiology and pathophysiology are incompletely understood. Because FAPS likely represents a heterogenous group of disorders, peripheral neuropathic pain mechanisms, alterations in endogenous pain modulation systems, or both may be involved in any one patient. The diagnosis of FAPS is made on the basis of positive symptom criteria and a longstanding history of symptoms; in the absence of alarm symptoms, an extensive diagnostic evaluation is not required. Management is based on a therapeutic physician-patient relationship and empirical treatment algorithms using various classes of centrally acting drugs, including antidepressants and anticonvulsants. The choice, dose, and combination of drugs are influenced by psychiatric comorbidities. Psychological treatment options include psychotherapy, relaxation techniques, and hypnosis. Refractory FAPS patients may benefit from a multidisciplinary pain clinic approach.

Functional abdominal pain syndrome (FAPS) represents a chronic pain disorder localized to the abdomen with features that differentiate it from other painful functional gastrointestinal disorders. Like other functional gastrointestinal disorders, symptoms are not explainable by a structural or metabolic disorder by using currently available diagnostic methods. FAPS appears highly related to alterations in endogenous pain modulation systems, including dysfunction of descending pain modulation and cortical pain modulation circuits. There is only 1 recognized diagnosis in this category of functional gastrointestinal disorders (Table 1).

Table 1. Functional Gastrointestinal Disorders

D. Functional abdominal pain syndrome (FAPS)

D. Functional Abdominal Pain Syndrome

Definition

FAPS represents a pain syndrome attributed to the abdomen that is poorly related to gut function, is associated with some loss of daily activities, and has been present for at least 6 months. The pain is constant, nearly constant, or at least frequently recurring. The principal criterion differentiating FAPS from other functional gastrointestinal disorders, such as irritable bowel syndrome (IBS) and functional dyspepsia, is the lack of symptom relationship to food intake or defecation. FAPS commonly is associated with a tendency to experience and report other somatic symptoms of discomfort, including chronic pain thought to be related to the gynecologic or urinary systems. Psychological disturbances are more likely when pain is persistent over a long period of time, is associated with chronic pain behaviors, and/or dominates the patient's life.[1] In psychiatric nosology, FAPS would qualify as a somatoform pain disorder and satisfy a pain criterion toward the diagnosis of somatization disorder.[2]

Epidemiology

The epidemiology of FAPS is incompletely known because of limited available data and methodological difficulties in establishing a diagnosis that can be differentiated from other more common functional gastrointestinal disorders, such as IBS and functional dyspepsia. However, it is generally considered that FAPS is a less common functional disorder than either IBS or functional dyspepsia. Reported prevalence figures in North America range from 0.5% to 2% and do not differ from those reported in other coun-

Abbreviations used in this paper: FAPS, functional abdominal pain syndrome; IBS, irritable bowel syndrome; TCAs, tricyclic antidepressants.

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tries.[3–5] The disorder is more common in women (female: male = 3:2),[6] with prevalence peaking in the fourth decade of life.[6,7] Patients with FAPS have high work absenteeism and health care utilization and, thus, impose a significant economic burden.[3,6,8]

D. Diagnostic Criteria* for Functional Abdominal Pain Syndrome

Must include *all* of the following:

1. **Continuous or nearly continuous abdominal pain**
2. **No or only occasional relationship of pain with physiological events (eg, eating, defecation, or menses)**
3. **Some loss of daily functioning**
4. **The pain is not feigned (eg, malingering)**
5. **Insufficient symptoms to meet criteria for another functional gastrointestinal disorder that would explain the pain**

**Criteria fulfilled for the last 3 months with symptom onset at least 6 months before diagnosis*

Rationale for Changes From Previous Criteria

Studies determining the reliability of these criteria in identifying a homogeneous population are lacking, and subjects with various different explanations for pain (in particular, chronic pain attributed to pelvic viscera) may be represented.[9] A lack of relationship of pain in FAPS with defecation separates this diagnosis from the functional bowel disorders, but the distinction from IBS has acknowledged difficulties and is not clearly based on scientific evidence.[10] The requirements for some loss of daily functioning and that pain is not feigned are derived from the diagnostic criteria for somatization disorder and undifferentiated somatoform disorder.[2] Qualifiers in the criteria (eg, "occasional" and "some") remain subjectively defined. Although discussed in the context of this article as a functional gastrointestinal disorder, FAPS also would qualify as a pain symptom contributing toward these diagnoses in psychiatric nosology.

Clinical Evaluation

A host of disorders can produce chronic abdominal pain, and the clinician should be aware of the extended differential diagnosis.[11] Algorithms to diagnose and treat FAPS are empirical because objective scientific evidence to support a singular approach does not exist. It is suggested that evaluation consist of a clinical/psychosocial assessment, observation of symptom reporting behaviors (Table 2), and a detailed physical examination. By answering a few questions, the physician effectively can appraise the clinical features of FAPS, identify the key psychosocial contributions to the disorder, and increase confidence in the diagnosis (Table 3).[11]

Table 2. Symptom-Related Behaviors Often Seen in Patients With FAPS

Expressing pain of varying intensity through verbal and nonverbal methods, may diminish when the patient is engaged in distracting activities, but increase when discussing a psychologically distressing issue or during examination
Urgent reporting of intense symptoms disproportionate to available clinical and laboratory data (*eg,* always rating the pain as "10" on a scale from 1 to 10)
Minimizing or denying a role for psychosocial contributors, or of evident anxiety or depression, or attributing them to the presence of the pain rather than to understandable life circumstances
Requesting diagnostic studies or even exploratory surgery to validate the condition as "organic"
Focusing attention on complete relief of symptoms rather than adaptation to a chronic disorder
Seeking health care frequently
Taking limited personal responsibility for self-management, while placing high expectations on the physician to achieve symptom relief
Making requests for narcotic analgesics when other treatment options have been implemented

Typically, FAPS patients describe abdominal pain in emotional terms,[12] as constant and not influenced by eating or defecation, as involving a large anatomic area rather than a precise location, as one of several other painful symptoms, and as a continuum of painful experiences beginning in childhood or recurring over time. For patients meeting diagnostic criteria for FAPS who exhibit a longstanding history of pain behaviors and certain psychosocial correlates, the clinical evaluation typically fails to disclose any other specific medical etiology to explain the illness.[11] In the absence of alarm features common to the functional gastrointestinal disorders, conservative efforts should be taken to exclude other medical conditions in a cost-effective manner. Further detail regarding the clinical evaluation is beyond the

Table 3. Questions for Appraising Clinical Features of FAPS While Identifying Key Psychosocial Contributors

1. What is the patient's life history of illness?
2. Why is the patient presenting now for medical care?
3. Is there a history of traumatic life events?
4. What is the patient's understanding of the illness?
5. What is the impact of the pain on activities and quality of life?
6. Is there an associated psychiatric diagnosis?
7. What is the role of family or culture?
8. What are the patient's psychosocial impairments and resources?

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scope of this article but can be found in prior reviews on the subject.[1,11]

Physiological Features

The observations that symptoms are reported as constant and unrelated to physiological events along with the common responsiveness of FAPS symptoms to low-dose tricyclic antidepressants point toward central neuropathic pain as a likely pathophysiological process.[13] The common comorbidity of FAPS with psychiatric disorders (in particular, anxiety, depression, and somatization) and the fact that chronic abdominal pain is common in major depressive disorder[14] suggest a prominent role of the central nervous system in altering pain modulation (cognitive or emotional). This does not exclude the possibility that, as in other neuropathic pain conditions, peripheral factors play a role in initiating or perpetuating this chronic pain state; scientific evidence to support such a mechanism, however, is not available. Descending pain modulation systems (opoidergic, serotonergic, and noradrenergic pathways) originate in distinct brainstem regions and modulate spinal cord excitability. It has been speculated that patients with various chronic pain syndromes, including fibromyalgia and FAPS, have compromised ability to activate such endogenous pain inhibition systems[15,16] or exhibit an imbalance between facilitatory and inhibitory systems. Recent studies performed by using functional brain–imaging techniques identify interactions between prefrontal cortical regions, limbic regions, and brainstem regions that could provide the neurobiological substrate for the influence of cognitive factors on symptom perception in FAPS.[17,18] Belief systems and coping styles characteristically seen in FAPS patients are consistent with the possibility of altered influences of cortical networks (including prefrontal and parietal cortical regions) on limbic and pain modulation circuits.[19]

Psychological Features

FAPS shows a close relationship with a variety of psychiatric and psychological conditions. Clinical evidence suggests that there is a strong association of aversive early life events and certain types of psychosocial stressors with increased pain reports among patients with functional gastrointestinal disorders.[20,21] The combination of genetic factors, vulnerability factors, and adult stress may determine in part the effectiveness of endogenous pain modulation systems and thereby influence development of FAPS. Population- and patient-based studies have confirmed the significant association between chronic abdominal pain and affective disorders, especially anxiety and depression.[22] Symptom-specific anxiety has been proposed recently as having a more direct influence on pain than general anxiety,[23] and this construct also has been investigated in functional gastrointestinal disorders including abdominal pain.[24] FAPS may be seen with other somatoform disorders (eg, somatization disorder, conversion disorder, and hypochondriasis).[2] In a study of somatization disorder identified in a primary-care population, abdominal pain was present in 30% of subjects and was the third most frequent somatic symptom (after headache and back pain).[25]

Pain beliefs and coping strategies are important in chronic pain and somatoform disorders and are significant predictors of quality of life impairment and treatment response.[26] Patients may exhibit ineffective coping strategies (eg, "catastrophizing") or have poor social or family support.[27–31] Unresolved losses, including onset or exacerbation of symptoms after the death of a parent or spouse, personally meaningful surgery (eg, hysterectomy and ostomy), or interference with the outcome of a pregnancy (abortion, stillbirth), are common in FAPS.[12,32] Histories of sexual and physical abuse are prevalent,[33,34] but elevated rates are not specific for this diagnosis. These histories predict poorer health status,[35] medical refractoriness, increased diagnostic and therapeutic procedures, and more frequent health care visits.[33] Such trauma may increase awareness of bodily sensations, although visceral pain thresholds are not reduced.[36,37]

Treatment

In contrast to IBS, treatment recommendations for patients with FAPS are empirical and not based on results from well-designed clinical trials. The accepted basis for clinical management of FAPS relies on establishing an effective patient-physician relationship, following a general treatment approach, and offering more specific management that often encompasses a combination of treatment options.[38–40] Factors that contribute to an effective patient-physician relationship[11,39,40] include empathy toward the patient,[41,42] patient education, validation of the illness, reassurance, treatment negotiation, and establishment of reasonable limits in time and effort. Before implementing specific forms of therapy (eg, antidepressants and anticonvulsants), the following general aspects of care should be considered: setting of treatment goals, helping the patient take responsibility, basing treatment on symptom severity and the degree of disability, and referring to a mental health care professional or, if available, to a multidisciplinary pain treatment center in selected patients, particularly those with refractory symptoms. Unfortunately, establishing a diagnosis, an effective patient-physician relationship, and a general treatment plan often is overlooked. Lack of confident

diagnosis, nontherapeutic physician attitudes, excessive testing and treatment (including unnecessary surgery), and patient cognitions often contribute to a cycle of ineffective, costly management.[43]

Pharmacological therapies. Antidepressants, particularly tricyclic antidepressants (TCAs) in low daily dosages, are helpful in treating chronic pain and other painful functional gastrointestinal disorders, such as IBS, and may be useful for the treatment of FAPS for both direct pain management effects and antidepressant effects.[44,45] However, evidence from controlled clinical trials for the effectiveness of antidepressants in FAPS or superiority of any 1 agent or antidepressant class in this disorder is not available. In other chronic pain conditions, trials with TCAs generally have been more successful than those using selective serotonin-reuptake inhibitors.[46,47] Newer agents with combined serotonin and norepinephrine reuptake activity (SNRIs, such as venlafaxine and duloxetine) have recognized pain-reducing effects in some somatic pain conditions and may prove useful in FAPS.[48] Both selective serotonin-reuptake inhibitors and SNRIs may be useful in the patient with comorbid depression or anxiety. Most analgesics (eg, aspirin and nonsteroidal anti-inflammatory drugs) offer little benefit, possibly because their actions primarily are peripheral in location. Narcotic analgesics should be avoided because of the likelihood of addiction and possibility of narcotic bowel syndrome.[49] Anticonvulsants have been evaluated in chronic pain syndromes, such as chronic neuropathic pain, as alternatives to TCAs with fewer side effects. The most studied have been gabapentin, carbamazepine, and lamotrigine.[50] They have not been examined specifically in abdominal pain disorders or FAPS, although there is a rationale[51,52] and evidence of efficacy in chronic pain management remains limited despite rather widespread use.[53] These agents are relatively safe and nonhabituating,[54] also may interrupt the cycle between pain and depression,[55] and might prove beneficial as adjunctive agents in some refractory patients, although direct evidence is lacking. In summary, anecdotal reports and observed benefits of some compounds in other chronic pain conditions provide the basis for pharmacological treatment of FAPS not scientific evidence from controlled clinical trials.

Psychological therapy. No psychological treatment study specifically has targeted adult FAPS. However, studies in other painful functional gastrointestinal disorders and nongastrointestinal pain conditions suggest that psychological treatments would be beneficial. Interventions of potential benefit include cognitive behavioral therapy,[44,56] dynamic or interpersonal psychotherapy,[57,58] hypnotherapy,[59] and stress management. Referral to pain treatment centers for multidisciplinary treatment programs may be the most efficient method of treating disability from refractory chronic pain.[60] Although the various psychological treatments described earlier have been shown to improve mood, coping, quality of life, and health care costs, they have less demonstrable impact on specific visceral or somatic symptoms, suggesting that their best use may be in combination with symptomatic treatment.[44,61] Psychological treatment may be most accepted if presented as a parallel intervention with ongoing medical care, a means for managing pain, and an attempt to reduce psychological distress from the symptoms.

Complementary therapies. Complementary and alternative therapies, such as spinal manipulation,[62,63] massage,[64] and acupuncture[65] commonly are used by patients with chronic pain disorders, including FAPS, although data supporting their use are limited. Few reports have described the use of transcutaneous electrical nerve stimulation in patients with FAPS, and uncontrolled results are indeterminant.[66] Although uncontrolled studies suggest a significant diagnostic and therapeutic benefit of laparoscopy with intended adhesiolysis in patients with chronic abdominal pain tentatively attributed to adhesions from prior surgical procedures,[67–69] the outcome may be placebo related and unsuspected diagnoses are rare.[70] A blinded, randomized trial of 100 patients undergoing either laparoscopic adhesiolysis or diagnostic laparoscopy alone found no advantage to adhesiolysis.[71] This study also reported a significant improvement in chronic abdominal pain over 6 months whether laparoscopy alone or laparoscopic adhesiolysis were performed, suggesting spontaneous improvement in these patients over time.

Topics for Future Research

FAPS remains an underinvestigated disorder with little evidence-based research appearing since the last edition of the Rome criteria. Evaluation of both diagnostic and treatment approaches for their effectiveness in clinical settings and studies of the long-term outcome of these approaches toward morbidity reduction are required. Specific areas of desired investigation include the following: (1) further characterization of patients with FAPS to augment the diagnostic criteria and improve their specificity; (2) better identification of the central neurophysiological processes involved in symptom production and effects of treatment on these processes; (3) clearer definition of investigative and management algorithms depending on presenting characteristics or by identification of clinical subgroups; (4) improved understanding of the relationship of somatization and somatization disorder to the presentation, management, and

outcome of FAPS; (5) assessment of physician role in management of FAPS patients and evaluation of patient-clinician interaction toward patient outcome; (6) additional studies of antidepressants in patients with FAPS with clarification of their optimal use; (7) investigation of augmentative therapies, including combination pharmacological interventions and mixed pharmacological/nonpharmacological treatments; and (8) better identification of the roles of nonpharmacological treatments, including exercise and complementary/alternative therapies, in FAPS management.

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